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<110> Johnson, Gary L.

<120> Method And Product For Regulating Cell Responsiveness To External Signals

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<151> 1995-05-15

<150> 08/323,460

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<150> 08/049,254

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<150> 08/410,602

<151> 1995-04-24

<150> 08/472,934

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Cys Arg Leu Asp Val Asn Thr Glu Leu Asn Ser Ser Ile Glu Asp Leu	
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 Ser Gly Phe Pro Gly Ala Ala Ala Ala Ser Pro Glu Ala Gly Gly Gly
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 Cys Gly Ser His Ser Ala Glu Leu Ala Ala Ala Arg Asp Ser Gly Ala
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 Arg Ser Pro Ala Gly Ala Glu Pro Pro Ser Ala Ala Ala Pro Ser Gly
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 Asp Arg Pro Glu Glu Arg Met Ile Arg Glu Lys Leu Lys Ala Thr Cys
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 Tyr Arg Val Phe Ile Gly Pro Gln Asn Cys Ser Cys Gly Arg Gly Ala
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 Glu Ser Leu Phe Gln Lys Tyr His Ser Arg Arg Ser Ser Arg Ile Lys
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 Gly Thr Gln Gln Ile Pro Ser Ala Tyr Lys Asp Leu Ala Glu Pro Trp
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Trp Asn Val Arg Glu Met Ala Leu Arg Arg Leu Ser His Asp Val Ser
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cac caa aaa aac aga atg atg ttc gag tca aat ttg aac ata gag gag 621
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Gln Glu Phe Thr Asp Tyr Asp Asn Pro Ile Phe Glu Lys Phe Gly Lys	
245 250 255 260	
gga gga aca tat cca aga agg tac cac gtt tcc tat cat cac cag gag	1293
Gly Gly Thr Tyr Pro Arg Arg Tyr His Val Ser Tyr His His Gln Glu	
265 270 275	
tat aat gac ggt cgg aag act ttt cca aga gct aga agg acc cag ggc	1341
Tyr Asn Asp Gly Arg Lys Thr Phe Pro Arg Ala Arg Arg Thr Gln Gly	
280 285 290	
acc agt ttc cgg tct cct gtg agc ttc agt cct act gat cac tcc tta	1389
Thr Ser Phe Arg Ser Pro Val Ser Phe Ser Pro Thr Asp His Ser Leu	
295 300 305	
agc act agt agt gga agc agt gtc ttt acc cca gag tat gac gac agt	1437
Ser Thr Ser Ser Gly Ser Ser Val Phe Thr Pro Glu Tyr Asp Asp Ser	
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cga ata aga aga cgg ggg agt gac ata gac aat cct act ttg act gtc	1485
Arg Ile Arg Arg Arg Gly Ser Asp Ile Asp Asn Pro Thr Leu Thr Val	
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aca gac atc agc cca ccc agc cgt tca cct cga gct ccg acc aac tgg	1533
Thr Asp Ile Ser Pro Pro Ser Arg Ser Pro Arg Ala Pro Thr Asn Trp	
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aga ctg ggc aag ctg ctt ggc caa gga gct ttt ggt agg gtc tac ctc	1581
Arg Leu Gly Lys Leu Leu Gly Gln Gly Ala Phe Gly Arg Val Tyr Leu	
360 365 370	
tgc tat gat gtt gat acc gga aga gag ctg gct gtt aag caa gtt cag	1629
Cys Tyr Asp Val Asp Thr Gly Arg Glu Leu Ala Val Lys Gln Val Gln	
375 380 385	
ttt aac cct gag agc cca gag acc agc aag gaa gta aat gca ctt gag	1677
Phe Asn Pro Glu Ser Pro Glu Thr Ser Lys Glu Val Asn Ala Leu Glu	
390 395 400	
tgt gaa att cag ttg ttg aaa aac ttg ttg cat gag cga att gtt cag	1725
Cys Glu Ile Gln Leu Leu Lys Asn Leu Leu His Glu Arg Ile Val Gln	
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tat tat ggc tgt ttg agg gat cct cag gag aaa aca ctt tcc atc ttt	1773
Tyr Tyr Gly Cys Leu Arg Asp Pro Gln Glu Lys Thr Leu Ser Ile Phe	
425 430 435	
atg gag ctc tcg cca ggg ggt tca att aag gac caa cta aaa gcc tac	1821
Met Glu Leu Ser Pro Gly Gly Ser Ile Lys Asp Gln Leu Lys Ala Tyr	
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Gly Ala Leu Thr Glu Asn Val Thr Arg Lys Tyr Thr Arg Gln Ile Leu	
455 460 465	

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 Glu Gly Val His Tyr Leu His Ser Asn Met Ile Val His Arg Asp Ile
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 Lys Gly Ala Asn Ile Leu Arg Asp Ser Thr Gly Asn Ile Lys Leu Gly
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 Asp Phe Gly Ala Ser Lys Arg Leu Gln Thr Ile Cys Leu Ser Gly Thr
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 gga atg aag tct gtc aca ggc acg cca tac tgg atg agt cct gag gtc 2061
 Gly Met Lys Ser Val Thr Gly Thr Pro Tyr Trp Met Ser Pro Glu Val
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 atc agt gga gaa ggc tat gga aga aaa gca gac atc tgg agt gta gca 2109
 Ile Ser Gly Glu Gly Tyr Gly Arg Lys Ala Asp Ile Trp Ser Val Ala
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 Cys Thr Val Val Glu Met Leu Thr Glu Lys Pro Pro Trp Ala Glu Phe
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 Ile Phe Val Glu Ala Lys Leu Arg Pro Ser Ala Glu Glu Leu Leu Arg
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 His Met Phe Val His Tyr His
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 Gln Asn Leu His His Gln Lys Asn Arg Met Met Phe Glu Ser Asn Leu
 35 40 45

Asn Ile Glu Glu Glu Lys Arg Ile Leu Gln Val Thr Arg Pro Val Lys
 50 55 60
 Leu Glu Asp Leu Arg Ser Lys Ser Lys Ile Ala Phe Gly Gln Ser Met
 65 70 75 80
 Asp Leu His Tyr Thr Asn Asn Glu Leu Val Ile Pro Leu Thr Thr Gln
 85 90 95
 Asp Asp Leu Asp Lys Ala Val Glu Leu Leu Asp Arg Ser Ile His Met
 100 105 110
 Lys Ser Leu Lys Ile Leu Leu Val Val Asn Gly Ser Thr Gln Ala Thr
 115 120 125
 Asn Leu Glu Pro Ser Pro Ser Pro Glu Asp Leu Asn Asn Thr Pro Leu
 130 135 140
 Gly Ala Glu Arg Lys Lys Arg Leu Ser Val Val Gly Pro Pro Asn Arg
 145 150 155 160
 Asp Arg Ser Ser Pro Pro Pro Gly Tyr Ile Pro Asp Ile Leu His Gln
 165 170 175
 Ile Ala Arg Asn Gly Ser Phe Thr Ser Ile Asn Ser Glu Gly Glu Phe
 180 185 190
 Ile Pro Glu Ser Met Asp Gln Met Leu Asp Pro Leu Ser Leu Ser Ser
 195 200 205
 Pro Glu Asn Ser Gly Ser Gly Ser Cys Pro Ser Leu Asp Ser Pro Leu
 210 215 220
 Asp Gly Glu Ser Tyr Pro Lys Ser Arg Met Pro Arg Ala Gln Ser Tyr
 225 230 235 240
 Pro Asp Asn His Gln Glu Phe Thr Asp Tyr Asp Asn Pro Ile Phe Glu
 245 250 255
 Lys Phe Gly Lys Gly Gly Thr Tyr Pro Arg Arg Tyr His Val Ser Tyr
 260 265 270
 His His Gln Glu Tyr Asn Asp Gly Arg Lys Thr Phe Pro Arg Ala Arg
 275 280 285
 Arg Thr Gln Gly Thr Ser Phe Arg Ser Pro Val Ser Phe Ser Pro Thr
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 Asp His Ser Leu Ser Thr Ser Ser Gly Ser Ser Val Phe Thr Pro Glu
 305 310 315 320
 Tyr Asp Asp Ser Arg Ile Arg Arg Arg Gly Ser Asp Ile Asp Asn Pro
 325 330 335
 Thr Leu Thr Val Thr Asp Ile Ser Pro Pro Ser Arg Ser Pro Arg Ala
 340 345 350
 Pro Thr Asn Trp Arg Leu Gly Lys Leu Leu Gly Gln Gly Ala Phe Gly
 355 360 365
 Arg Val Tyr Leu Cys Tyr Asp Val Asp Thr Gly Arg Glu Leu Ala Val
 370 375 380

Lys Gln Val Gln Phe Asn Pro Glu Ser Pro Glu Thr Ser Lys Glu Val
 385 390 395 400
 Asn Ala Leu Glu Cys Glu Ile Gln Leu Leu Lys Asn Leu Leu His Glu
 405 410 415
 Arg Ile Val Gln Tyr Tyr Gly Cys Leu Arg Asp Pro Gln Glu Lys Thr
 420 425 430
 Leu Ser Ile Phe Met Glu Leu Ser Pro Gly Gly Ser Ile Lys Asp Gln
 435 440 445
 Leu Lys Ala Tyr Gly Ala Leu Thr Glu Asn Val Thr Arg Lys Tyr Thr
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 Arg Gln Ile Leu Glu Gly Val His Tyr Leu His Ser Asn Met Ile Val
 465 470 475 480
 His Arg Asp Ile Lys Gly Ala Asn Ile Leu Arg Asp Ser Thr Gly Asn
 485 490 495
 Ile Lys Leu Gly Asp Phe Gly Ala Ser Lys Arg Leu Gln Thr Ile Cys
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 Leu Ser Gly Thr Gly Met Lys Ser Val Thr Gly Thr Pro Tyr Trp Met
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 Ser Pro Glu Val Ile Ser Gly Glu Gly Tyr Gly Arg Lys Ala Asp Ile
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 Trp Ser Val Ala Cys Thr Val Val Glu Met Leu Thr Glu Lys Pro Pro
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 Trp Ala Glu Phe Glu Ala Met Ala Ala Ile Phe Lys Ile Ala Thr Gln
 565 570 575
 Pro Thr Asn Pro Lys Leu Pro Pro His Val Ser Asp Tyr Thr Arg Asp
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 Phe Leu Lys Arg Ile Phe Val Glu Ala Lys Leu Arg Pro Ser Ala Glu
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<211> 2503

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<213> Mus musculus

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<400> 7

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 ggggcttcct tttcatcggc ccagcttatt ccgcggggccc cggggctgca gctaccacaga 180
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tccccggccc	gtgcccggtt	gtctgcggcc	cttcaggcct	cagggacccc	cgcgaggcgc	300
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agaaccattt	tcctaatttt	caaattattg	agctggtcgc	gcata	atg gat gat cag	477
					Met Asp Asp Gln	
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caa gct ttg aat tca atc atg caa gat ttg gct gtc ctt cat aag gcc						525
Gln Ala Leu Asn Ser Ile Met Gln Asp Leu Ala Val Leu His Lys Ala						
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agt cgg cca gca tta tct tta caa gaa acc agg aaa gca aaa cct tca						573
Ser Arg Pro Ala Leu Ser Leu Gln Glu Thr Arg Lys Ala Lys Pro Ser		25		30	35	
tca cca aaa aaa cag aat gat gtt cga gtc aaa ttt gaa cat aga gga						621
Ser Pro Lys Lys Gln Asn Asp Val Arg Val Lys Phe Glu His Arg Gly		40		45	50	
gaa aaa agg atc ctg cag gtt act aga cca gtt aaa cta gaa gac ctg						669
Glu Lys Arg Ile Leu Gln Val Thr Arg Pro Val Lys Leu Glu Asp Leu			60		65	
	55					
aga tct aag tct aag atc gcc ttt ggg cag tct atg gat cta cac tat						717
Arg Ser Lys Ser Lys Ile Ala Phe Gly Gln Ser Met Asp Leu His Tyr			75		80	
	70					
acc aac aat gag ttg gta att ccg tta act acc caa gat gac ttg gac						765
Thr Asn Asn Glu Leu Val Ile Pro Leu Thr Thr Gln Asp Asp Leu Asp				90	95	100
	85					
aaa gct gtg gaa ctg ctg gat cgc agt att cac atg aag agt ctc aag						813
Lys Ala Val Glu Leu Leu Asp Arg Ser Ile His Met Lys Ser Leu Lys		105		110	115	
ata tta ctt gta gta aat ggg agt aca cag gct act aat tta gaa cca						861
Ile Leu Leu Val Val Asn Gly Ser Thr Gln Ala Thr Asn Leu Glu Pro		120		125	130	
tca ccg tca cca gaa gat ttg aat aat aca cca ctt ggt gca gag agg						909
Ser Pro Ser Pro Glu Asp Leu Asn Asn Thr Pro Leu Gly Ala Glu Arg		135		140	145	
aaa aag cgg cta tct gta gta ggt ccc cct aat agg gat aga agt tcc						957
Lys Lys Arg Leu Ser Val Val Gly Pro Pro Asn Arg Asp Arg Ser Ser		150		155	160	
cct cct cca gga tac att cca gac ata cta cac cag att gcc cgg aat						1005
Pro Pro Pro Gly Tyr Ile Pro Asp Ile Leu His Gln Ile Ala Arg Asn			170		175	180
ggg tca ttc act agc atc aac agt gaa gga gag ttc att cca gag agc						1053
Gly Ser Phe Thr Ser Ile Asn Ser Glu Gly Glu Phe Ile Pro Glu Ser		185		190	195	
atg gac caa atg ctg gat cca ttg tct tta agc agc cct gaa aat tct						1101
Met Asp Gln Met Leu Asp Pro Leu Ser Leu Ser Ser Pro Glu Asn Ser		200		205	210	

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Gly Ser Gly Ser Cys Pro Ser Leu Asp Ser Pro Leu Asp Gly Glu Ser	
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Tyr Pro Lys Ser Arg Met Pro Arg Ala Gln Ser Tyr Pro Asp Asn His	
230 235 240	
cag gag ttt aca gac tat gat aac ccc att ttt gag aaa ttt gga aaa	1245
Gln Glu Phe Thr Asp Tyr Asp Asn Pro Ile Phe Glu Lys Phe Gly Lys	
245 250 255 260	
gga gga aca tat cca aga agg tac cac gtt tcc tat cat cac cag gag	1293
Gly Gly Thr Tyr Pro Arg Arg Tyr His Val Ser Tyr His His Gln Glu	
265 270 275	
tat aat gac ggt cgg aag act ttt cca aga gct aga agg acc cag ggc	1341
Tyr Asn Asp Gly Arg Lys Thr Phe Pro Arg Ala Arg Arg Thr Gln Gly	
280 285 290	
acc agt ttc cgg tct cct gtg agc ttc agt cct act gat cac tcc tta	1389
Thr Ser Phe Arg Ser Pro Val Ser Phe Ser Pro Thr Asp His Ser Leu	
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agc act agt agt gga agc agt gtc ttt acc cca gag tat gac gac agt	1437
Ser Thr Ser Ser Gly Ser Ser Val Phe Thr Pro Glu Tyr Asp Asp Ser	
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cga ata aga aga cgg ggg agt gac ata gac aat cct act ttg act gtc	1485
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Cys Tyr Asp Val Asp Thr Gly Arg Glu Leu Ala Val Lys Gln Val Gln	
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Phe Asn Pro Glu Ser Pro Glu Thr Ser Lys Glu Val Asn Ala Leu Glu	
390 395 400	
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Cys Glu Ile Gln Leu Leu Lys Asn Leu Leu His Glu Arg Ile Val Gln	
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Tyr Tyr Gly Cys Leu Arg Asp Pro Gln Glu Lys Thr Leu Ser Ile Phe	
425 430 435	
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Met Glu Tyr Met Pro Gly Gly Ser Ile Lys Asp Gln Leu Lys Ala Tyr	
440 445 450	
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Gly Ala Leu Thr Glu Asn Val Thr Arg Lys Tyr Thr Arg Gln Ile Leu	
455 460 465	

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 Glu Gly Val His Tyr Leu His Ser Asn Met Ile Val His Arg Asp Ile
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 Lys Gly Ala Asn Ile Leu Arg Asp Ser Thr Gly Asn Ile Lys Leu Gly
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 505 510 515

gga atg aag tct gtc aca ggc acg cca tac tgg atg agt cct gag gtc 2061
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atc agt gga gaa ggc tat gga aga aaa gca gac atc tgg agt gta gca 2109
 Ile Ser Gly Glu Tyr Gly Arg Lys Ala Asp Ile Trp Ser Val Ala
 535 540 545

tgt act gtg gta gaa atg cta act gaa aag cca cct tgg gct gaa ttt 2157
 Cys Thr Val Val Glu Met Leu Thr Glu Lys Pro Pro Trp Ala Glu Phe
 550 555 560

gaa gca atg gct gcc atc ttt aag atc gcc act cag cca acg aac cca 2205
 Glu Ala Met Ala Ala Ile Phe Lys Ile Ala Thr Gln Pro Thr Asn Pro
 565 570 575 580

aag ctg cca cct cat gtc tca gac tat act cgg gac ttc ctc aaa cgg 2253
 Lys Leu Pro Pro His Val Ser Asp Tyr Thr Arg Asp Phe Leu Lys Arg
 585 590 595

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 Ile Phe Val Glu Ala Lys Leu Arg Pro Ser Ala Glu Glu Leu Leu Arg
 600 605 610

cac atg ttt gtg cat tat cac tagcagcggc ggcttcggtc ctccaccagc 2352
 His Met Phe Val His Tyr His
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tccatcctcg cggccacctt ctctcttact gcactttcct tttttataaa aaagagagat 2412

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 35 40 45
 Glu His Arg Gly Glu Lys Arg Ile Leu Gln Val Thr Arg Pro Val Lys
 50 55 60

Leu	Glu	Asp	Leu	Arg	Ser	Lys	Ser	Lys	Ile	Ala	Phe	Gly	Gln	Ser	Met	65	70	75	80
Asp	Leu	His	Tyr	Thr	Asn	Asn	Glu	Leu	Val	Ile	Pro	Leu	Thr	Thr	Gln	85	90	95	
Asp	Asp	Leu	Asp	Lys	Ala	Val	Glu	Leu	Leu	Asp	Arg	Ser	Ile	His	Met	100	105	110	
Lys	Ser	Leu	Lys	Ile	Leu	Leu	Val	Val	Asn	Gly	Ser	Thr	Gln	Ala	Thr	115	120	125	
Asn	Leu	Glu	Pro	Ser	Pro	Ser	Pro	Glu	Asp	Leu	Asn	Asn	Thr	Pro	Leu	130	135	140	
Gly	Ala	Glu	Arg	Lys	Lys	Arg	Leu	Ser	Val	Val	Gly	Pro	Pro	Asn	Arg	145	150	155	160
Asp	Arg	Ser	Ser	Pro	Pro	Pro	Gly	Tyr	Ile	Pro	Asp	Ile	Leu	His	Gln	165	170	175	
Ile	Ala	Arg	Asn	Gly	Ser	Phe	Thr	Ser	Ile	Asn	Ser	Glu	Gly	Glu	Phe	180	185	190	
Ile	Pro	Glu	Ser	Met	Asp	Gln	Met	Leu	Asp	Pro	Leu	Ser	Leu	Ser	Ser	195	200	205	
Pro	Glu	Asn	Ser	Gly	Ser	Gly	Ser	Cys	Pro	Ser	Leu	Asp	Ser	Pro	Leu	210	215	220	
Asp	Gly	Glu	Ser	Tyr	Pro	Lys	Ser	Arg	Met	Pro	Arg	Ala	Gln	Ser	Tyr	225	230	235	240
Pro	Asp	Asn	His	Gln	Glu	Phe	Thr	Asp	Tyr	Asp	Asn	Pro	Ile	Phe	Glu	245	250	255	
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His	His	Gln	Glu	Tyr	Asn	Asp	Gly	Arg	Lys	Thr	Phe	Pro	Arg	Ala	Arg	275	280	285	
Arg	Thr	Gln	Gly	Thr	Ser	Phe	Arg	Ser	Pro	Val	Ser	Phe	Ser	Pro	Thr	290	295	300	
Asp	His	Ser	Leu	Ser	Thr	Ser	Ser	Gly	Ser	Ser	Val	Phe	Thr	Pro	Glu	305	310	315	320
Tyr	Asp	Asp	Ser	Arg	Ile	Arg	Arg	Arg	Gly	Ser	Asp	Ile	Asp	Asn	Pro	325	330	335	
Thr	Leu	Thr	Val	Thr	Asp	Ile	Ser	Pro	Pro	Ser	Arg	Ser	Pro	Arg	Ala	340	345	350	
Pro	Thr	Asn	Trp	Arg	Leu	Gly	Lys	Leu	Leu	Gly	Gln	Gly	Ala	Phe	Gly	355	360	365	
Arg	Val	Tyr	Leu	Cys	Tyr	Asp	Val	Asp	Thr	Gly	Arg	Glu	Leu	Ala	Val	370	375	380	
Lys	Gln	Val	Gln	Phe	Asn	Pro	Glu	Ser	Pro	Glu	Thr	Ser	Lys	Glu	Val	385	390	395	400

Asn Ala Leu Glu Cys Glu Ile Gln Leu Leu Lys Asn Leu Leu His Glu
 405 410 415
 Arg Ile Val Gln Tyr Tyr Gly Cys Leu Arg Asp Pro Gln Glu Lys Thr
 420 425 430
 Leu Ser Ile Phe Met Glu Tyr Met Pro Gly Gly Ser Ile Lys Asp Gln
 435 440 445
 Leu Lys Ala Tyr Gly Ala Leu Thr Glu Asn Val Thr Arg Lys Tyr Thr
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 Arg Gln Ile Leu Glu Gly Val His Tyr Leu His Ser Asn Met Ile Val
 465 470 475 480
 His Arg Asp Ile Lys Gly Ala Asn Ile Leu Arg Asp Ser Thr Gly Asn
 485 490 495
 Ile Lys Leu Gly Asp Phe Gly Ala Ser Lys Arg Leu Gln Thr Ile Cys
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 515 520 525
 Ser Pro Glu Val Ile Ser Gly Glu Gly Tyr Gly Arg Lys Ala Asp Ile
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 Trp Ser Val Ala Cys Thr Val Val Glu Met Leu Thr Glu Lys Pro Pro
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 Pro Thr Asn Pro Lys Leu Pro Pro His Val Ser Asp Tyr Thr Arg Asp
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<211> 3089

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<213> Mus musculus

<220>

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<222> (400)..(2277)

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 gccggggatg tagcgggcca acctgctcat gccacagcgc ccggccgcgg ccgagccgga 240
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tgggctgtag tgcgccaccgc cgcctccgcc atcgccacc atg gat gaa caa gag	414
Met Asp Glu Gln Glu	
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Ala Leu Asp Ser Ile Met Lys Asp Leu Val Ala Leu Gln Met Ser Arg	
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cga acc cgg ttg tct gga tat gag acc atg aag aat aag gac aca ggt	510
Arg Thr Arg Leu Ser Gly Tyr Glu Thr Met Lys Asn Lys Asp Thr Gly	
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cac cca aac agg cag agt gac gtc aga atc aag ttt gaa cac aat ggg	558
His Pro Asn Arg Gln Ser Asp Val Arg Ile Lys Phe Glu His Asn Gly	
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Glu Arg Arg Ile Ile Ala Phe Ser Arg Pro Val Arg Tyr Glu Asp Val	
55 60 65	
gag cac aag gtg aca aca gtc ttt ggg cag cct ctt gat ttg cat tat	654
Glu His Lys Val Thr Thr Val Phe Gly Gln Pro Leu Asp Leu His Tyr	
70 75 80 85	
atg aat aat gag ctc tcc atc ctg ttg aaa aac caa gat gat ctc gat	702
Met Asn Asn Glu Leu Ser Ile Leu Leu Lys Asn Gln Asp Asp Leu Asp	
90 95 100	
aaa gcc att gac att ttg gat aga agc tca agt atg aaa agc ctt agg	750
Lys Ala Ile Asp Ile Leu Asp Arg Ser Ser Ser Met Lys Ser Leu Arg	
105 110 115	
ata cta ctg tta tcc caa gac aga aac cat act agt tcc tct ccc cac	798
Ile Leu Leu Leu Ser Gln Asp Arg Asn His Thr Ser Ser Ser Pro His	
120 125 130	
tct gga gtg tcc agg cag gtt cgg atc aag cct tcc cag tct gca ggg	846
Ser Gly Val Ser Arg Gln Val Arg Ile Lys Pro Ser Gln Ser Ala Gly	
135 140 145	
gat ata aat acc atc tac caa gct cct gag ccc aga agc agg cac ctg	894
Asp Ile Asn Thr Ile Tyr Gln Ala Pro Glu Pro Arg Ser Arg His Leu	
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tct gtc agc tcc cag aac cct ggc cga agc tct cct ccc ccg gga tat	942
Ser Val Ser Ser Gln Asn Pro Gly Arg Ser Ser Pro Pro Pro Gly Tyr	
170 175 180	
gta cct gag cga caa cag cac att gcc cgg caa gga tcc tat acg agc	990
Val Pro Glu Arg Gln Gln His Ile Ala Arg Gln Gly Ser Tyr Thr Ser	
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Ser Leu Asp Arg Ser Ala Asp Ser Pro Ser Phe Arg Lys Ser Gln Met	
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Arg Tyr His Val Ser Val His His Lys Asp Tyr Asn Asp Gly Arg Arg	
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Thr Phe Pro Arg Ile Arg Arg His Gln Gly Asn Leu Phe Thr Leu Val	
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Pro Ser Ser Arg Ser Leu Ser Thr Asn Gly Glu Asn Met Gly Val Ala	
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Val Gln Tyr Leu Asp Pro Arg Gly Arg Leu Arg Ser Ala Asp Ser Glu	
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Asn Ala Leu Thr Val Gln Glu Arg Asn Val Pro Thr Lys Ser Pro Ser	
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Ala Pro Ile Asn Trp Arg Arg Gly Lys Leu Leu Gly Gln Gly Ala Phe	
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Gly Arg Val Tyr Leu Cys Tyr Asp Val Asp Thr Gly Arg Glu Leu Ala	
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Ser Lys Gln Val Gln Phe Asp Pro Asp Ser Pro Glu Thr Ser Lys Glu	
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Val Ser Ala Leu Glu Cys Glu Ile Gln Leu Leu Lys Asn Leu Gln His	
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 Glu Glu Leu Leu Thr His His Phe Ala Gln Leu Val Tyr
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Asn	Lys	Asp	Thr	Gly	His	Pro	Asn	Arg	Gln	Ser	Asp	Val	Arg	Ile	Lys	35	40	45	
Phe	Glu	His	Asn	Gly	Glu	Arg	Arg	Ile	Ile	Ala	Phe	Ser	Arg	Pro	Val	50	55	60	
Arg	Tyr	Glu	Asp	Val	Glu	His	Lys	Val	Thr	Thr	Val	Phe	Gly	Gln	Pro	65	70	75	80
Leu	Asp	Leu	His	Tyr	Met	Asn	Asn	Glu	Leu	Ser	Ile	Leu	Leu	Lys	Asn	85	90	95	
Gln	Asp	Asp	Leu	Asp	Lys	Ala	Ile	Asp	Ile	Leu	Asp	Arg	Ser	Ser	Ser	100	105	110	
Met	Lys	Ser	Leu	Arg	Ile	Leu	Leu	Leu	Ser	Gln	Asp	Arg	Asn	His	Thr	115	120	125	
Ser	Ser	Ser	Pro	His	Ser	Gly	Val	Ser	Arg	Gln	Val	Arg	Ile	Lys	Pro	130	135	140	
Ser	Gln	Ser	Ala	Gly	Asp	Ile	Asn	Thr	Ile	Tyr	Gln	Ala	Pro	Glu	Pro	145	150	155	160
Arg	Ser	Arg	His	Leu	Ser	Val	Ser	Ser	Gln	Asn	Pro	Gly	Arg	Ser	Ser	165	170	175	
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Ser	Gly	Ser	Cys	Gln	Ser	Leu	Asp	Arg	Ser	Ala	Asp	Ser	Pro	Ser	Phe	225	230	235	240
Arg	Lys	Ser	Gln	Met	Ser	Arg	Ala	Arg	Ser	Phe	Pro	Asp	Asn	Arg	Lys	245	250	255	
Glu	Cys	Ser	Asp	Arg	Glu	Thr	Gln	Leu	Tyr	Asp	Lys	Gly	Val	Lys	Gly	260	265	270	
Gly	Thr	Tyr	Pro	Arg	Arg	Tyr	His	Val	Ser	Val	His	His	Lys	Asp	Tyr	275	280	285	
Asn	Asp	Gly	Arg	Arg	Thr	Phe	Pro	Arg	Ile	Arg	Arg	His	Gln	Gly	Asn	290	295	300	

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 Asn Met Gly Val Ala Val Gln Tyr Leu Asp Pro Arg Gly Arg Leu Arg
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 Ser Ala Asp Ser Glu Asn Ala Leu Thr Val Gln Glu Arg Asn Val Pro
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 Thr Lys Ser Pro Ser Ala Pro Ile Asn Trp Arg Arg Gly Lys Leu Leu
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 Gly Gln Gly Ala Phe Gly Arg Val Tyr Leu Cys Tyr Asp Val Asp Thr
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 Gly Arg Glu Leu Ala Ser Lys Gln Val Gln Phe Asp Pro Asp Ser Pro
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 Lys Asn Leu Gln His Glu Arg Ile Val Gln Tyr Tyr Gly Cys Leu Arg
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 Val Tyr
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Gln	Glu	Val	Leu	Gly	Gly	Leu	Glu	Lys	Thr	Asp	Cys	Asn	Met	Asp	Ala											
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Phe	Glu	Glu	Asp	Leu	Gln	Lys	Met	Leu	Met	Val	Tyr	Phe	Asp	Tyr	Met											
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Leu	Lys	Asn	Leu	Leu	Glu	Glu	Glu	Trp	Asn	Phe	Thr	Lys	Glu	Ile	Thr											
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 890

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 ttgagctcct ggggttcaga agaacatgta gtgttcccgg gtgtccggga cgtttatttc 3766
 aacctcctgg tcgttggtc tgactgtgga gcctccttgt tcgaaagctg caggtttggt 3826
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 aggaaagcga aaaaaaaaaa aaaaaaa 3913

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 Gln Gln Leu Pro Gln Ala Ser His Ser Leu Lys Asn Leu Leu Glu Glu
 50 55 60
 Glu Trp Asn Phe Thr Lys Glu Ile Thr His Tyr Ile Arg Gly Gly Glu
 65 70 75 80
 Ala Gln Ala Gly Lys Leu Phe Cys Asp Ile Ala Gly Met Leu Leu Lys
 85 90 95
 Ser Thr Gly Ser Phe Leu Glu Ser Gly Leu Gln Glu Ser Cys Ala Glu
 100 105 110
 Leu Trp Thr Xaa Ala Asp Asp Asn Gly Ala Ala Asp Glu Leu Arg Arg
 115 120 125

Ser	Val	Ile	Glu	Ile	Ser	Arg	Ala	Leu	Lys	Glu	Leu	Phe	His	Glu	Ala	
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Arg	Glu	Arg	Ala	Ser	Lys	Ala	Leu	Gly	Phe	Ala	Lys	Met	Leu	Arg	Lys	
145					150					155					160	
Asp	Leu	Glu	Ile	Ala	Ala	Glu	Phe	Val	Leu	Ser	Ala	Ser	Ala	Arg	Glu	
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Leu	Leu	Asp	Ala	Leu	Lys	Ala	Lys	Gln	Tyr	Val	Lys	Val	Gln	Ile	Pro	
			180					185					190			
Gly	Leu	Glu	Asn	Leu	His	Val	Phe	Val	Pro	Asp	Ser	Leu	Ala	Glu	Glu	
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Lys	Lys	Ile	Ile	Leu	Gln	Leu	Leu	Asn	Ala	Ala	Thr	Gly	Lys	Asp	Cys	
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Ser	Lys	Asp	Pro	Asp	Asp	Val	Phe	Met	Asp	Ala	Phe	Leu	Leu	Leu	Thr	
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Lys	His	Gly	Asp	Arg	Ala	Arg	Asp	Ser	Glu	Asp	Gly	Trp	Gly	Thr	Trp	
				245					250					255		
Glu	Ala	Arg	Ala	Val	Lys	Ile	Val	Pro	Gln	Val	Glu	Thr	Val	Asp	Thr	
			260					265						270		
Leu	Arg	Ser	Met	Gln	Val	Asp	Asn	Leu	Leu	Leu	Val	Val	Met	Glu	Ser	
		275					280					285				
Ala	His	Leu	Val	Leu	Gln	Arg	Lys	Ala	Phe	Gln	Gln	Ser	Ile	Glu	Gly	
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Leu	Met	Thr	Val	Arg	His	Glu	Gln	Thr	Ser	Ser	Gln	Pro	Ile	Ile	Ala	
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Lys	Gly	Leu	Gln	Gln	Leu	Lys	Asn	Asp	Ala	Leu	Glu	Leu	Cys	Asn	Arg	
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Ile	Ser	Asp	Ala	Ile	Asp	Arg	Val	Asp	His	Met	Phe	Thr	Leu	Glu	Phe	
			340					345					350			
Asp	Ala	Glu	Val	Glu	Glu	Ser	Glu	Ser	Ala	Thr	Leu	Gln	Gln	Tyr	Tyr	
		355					360					365				
Arg	Glu	Ala	Met	Ile	Gln	Gly	Tyr	Asn	Phe	Gly	Phe	Glu	Tyr	His	Lys	
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Glu	Val	Val	Arg	Leu	Met	Ser	Gly	Glu	Phe	Arg	Gln	Lys	Ile	Gly	Asp	
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Lys	Tyr	Ile	Thr	Phe	Ala	Gln	Lys	Trp	Met	Asn	Tyr	Val	Leu	Thr	Lys	
				405					410					415		
Cys	Glu	Ser	Gly	Arg	Gly	Thr	Arg	Pro	Arg	Trp	Ala	Thr	Gln	Gly	Phe	
			420					425					430			
Asp	Phe	Leu	Gln	Ala	Ile	Glu	Pro	Ala	Phe	Ile	Ser	Ala	Leu	Pro	Glu	
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	450					455					460					

Val	Ile	Gly	Lys	Pro	His	Ser	Pro	Val	Thr	Ala	Ile	His	Arg	Asn	Ser			465	470	475		480
Pro	Arg	Pro	Val	Lys	Val	Pro	Arg	Cys	His	Ser	Asp	Pro	Pro	Asn	Pro			485	490			495
His	Leu	Ile	Ile	Pro	Thr	Pro	Glu	Gly	Phe	Arg	Gly	Ser	Ser	Val	Pro			500	505			510
Glu	Asn	Asp	Arg	Leu	Ala	Ser	Ile	Ala	Ala	Glu	Leu	Gln	Phe	Arg	Ser			515	520			525
Leu	Ser	Arg	His	Ser	Ser	Pro	Thr	Glu	Glu	Arg	Asp	Glu	Pro	Ala	Tyr			530	535			540
Pro	Arg	Ser	Asp	Ser	Ser	Gly	Ser	Thr	Arg	Arg	Ser	Trp	Glu	Leu	Arg			545	550	555		560
Thr	Leu	Ile	Ser	Gln	Thr	Lys	Asp	Ser	Ala	Ser	Lys	Gln	Gly	Pro	Ile			565	570			575
Glu	Ala	Ile	Gln	Lys	Ser	Val	Arg	Leu	Phe	Glu	Glu	Arg	Arg	Tyr	Arg			580	585			590
Glu	Met	Arg	Arg	Lys	Asn	Ile	Ile	Gly	Gln	Val	Cys	Asp	Thr	Pro	Lys			595	600			605
Ser	Tyr	Asp	Asn	Val	Met	His	Val	Gly	Leu	Arg	Lys	Val	Thr	Phe	Lys			610	615			620
Trp	Gln	Arg	Gly	Asn	Lys	Ile	Gly	Glu	Gly	Gln	Tyr	Gly	Lys	Val	Tyr			625	630	635		640
Thr	Cys	Ile	Ser	Val	Asp	Thr	Gly	Glu	Leu	Met	Ala	Met	Lys	Glu	Ile			645	650			655
Arg	Phe	Gln	Pro	Asn	Asp	His	Lys	Thr	Ile	Lys	Glu	Thr	Ala	Asp	Glu			660	665			670
Leu	Lys	Ile	Phe	Glu	Gly	Ile	Lys	His	Pro	Asn	Leu	Val	Arg	Tyr	Phe			675	680			685
Gly	Val	Glu	Leu	His	Arg	Glu	Glu	Met	Tyr	Ile	Phe	Met	Glu	Tyr	Cys			690	695			700
Asp	Glu	Gly	Thr	Leu	Glu	Glu	Val	Ser	Arg	Leu	Gly	Leu	Gln	Glu	His			705	710	715		720
Val	Ile	Arg	Leu	Tyr	Thr	Lys	Gln	Ile	Thr	Val	Ala	Ile	Asn	Val	Leu			725	730			735
His	Glu	His	Gly	Ile	Val	His	Arg	Asp	Ile	Lys	Gly	Ala	Asn	Ile	Phe			740	745			750
Leu	Thr	Ser	Ser	Gly	Leu	Ile	Lys	Leu	Gly	Asp	Phe	Gly	Cys	Ser	Val			755	760			765
Lys	Leu	Lys	Asn	Asn	Ala	Gln	Thr	Met	Pro	Gly	Glu	Val	Asn	Ser	Thr			770	775			780
Leu	Gly	Thr	Ala	Ala	Tyr	Met	Ala	Pro	Glu	Val	Ile	Thr	Arg	Ala	Lys			785	790	795		800

Gly Glu Gly His Gly Arg Ala Ala Asp Ile Trp Ser Leu Gly Cys Val
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Val Ile Glu Met Val Thr Gly Lys Arg Pro Trp His Glu Tyr Glu His
 820 825 830

Asn Phe Gln Ile Met Tyr Lys Val Gly Met Gly His Lys Pro Pro Ile
 835 840 845

Pro Glu Arg Leu Ser Pro Glu Gly Lys Ala Phe Leu Ser His Cys Leu
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 gcaagg atg aga gac gcc atc gcc gag ccg gtg ccc cct cct gcc ctc 168
 Met Arg Asp Ala Ile Ala Glu Pro Val Pro Pro Pro Ala Leu
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gcc gac acc cct gca gcc gcc atg gag gag ctg cgg cca gca ccg ccg 216
 Ala Asp Thr Pro Ala Ala Ala Met Glu Glu Leu Arg Pro Ala Pro Pro
 15 20 25 30

cca cag ccc gag ccg gat ccg gag tgc tgc cca gcg gcg agg cag gag 264
 Pro Gln Pro Glu Pro Asp Pro Glu Cys Cys Pro Ala Ala Arg Gln Glu
 35 40 45

tgc atg ttg gga gag tgc gct cgc aaa agt atg gaa tcc gat cca gag 312
 Cys Met Leu Gly Glu Ser Ala Arg Lys Ser Met Glu Ser Asp Pro Glu
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gac ttt tct gat gaa aca aat aca gag act ctc tac ggc acc tca ccc 360
 Asp Phe Ser Asp Glu Thr Asn Thr Glu Thr Leu Tyr Gly Thr Ser Pro
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cca agc aca cct cga cag atg aaa cgc ctg tca gcc aag cac cag agg 408
 Pro Ser Thr Pro Arg Gln Met Lys Arg Leu Ser Ala Lys His Gln Arg
 80 85 90

aac agc gca ggg agg ccg gcc agc cga tgc aac ttg aaa gaa aaa atg 456
 Asn Ser Ala Gly Arg Pro Ala Ser Arg Ser Asn Leu Lys Glu Lys Met
 95 100 105 110

aac aca ccg agt cag tct cca cat aaa gat ttg ggg aag gga gtg gag 504
 Asn Thr Pro Ser Gln Ser Pro His Lys Asp Leu Gly Lys Gly Val Glu
 115 120 125

acc	gtg	gaa	gaa	tac	agc	tac	aag	cag	gag	aag	aag	att	cga	gca	act	552
Thr	Val	Glu	Glu	Tyr	Ser	Tyr	Lys	Gln	Glu	Lys	Lys	Ile	Arg	Ala	Thr	
			130					135					140			
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Leu	Arg	Thr	Thr	Glu	Arg	Asp	His	Lys	Lys	Asn	Ala	Gln	Cys	Ser	Phe	
		145					150					155				
atg	ttg	gac	tcg	gtg	gct	ggg	tct	ttg	cca	aaa	aaa	tcg	att	cca	gat	648
Met	Leu	Asp	Ser	Val	Ala	Gly	Ser	Leu	Pro	Lys	Lys	Ser	Ile	Pro	Asp	
	160					165					170					
gtg	gat	ctc	aat	aag	cct	tac	ctc	agt	ctc	ggc	tgt	agc	aat	gcc	aag	696
Val	Asp	Leu	Asn	Lys	Pro	Tyr	Leu	Ser	Leu	Gly	Cys	Ser	Asn	Ala	Lys	
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ctg	ccc	gtc	tcg	atg	ccc	atg	ccg	ata	gcc	aga	act	gca	cgg	cag	act	744
Leu	Pro	Val	Ser	Met	Pro	Met	Pro	Ile	Ala	Arg	Thr	Ala	Arg	Gln	Thr	
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tcc	cgg	act	gac	tgc	ccc	gca	gat	cgc	tta	aag	ttc	ttt	gaa	aca	ctg	792
Ser	Arg	Thr	Asp	Cys	Pro	Ala	Asp	Arg	Leu	Lys	Phe	Phe	Glu	Thr	Leu	
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cgc	ctt	ttg	cta	aag	ctt	acc	tca	gtc	tcg	aag	aag	aag	gac	agg	gag	840
Arg	Leu	Leu	Leu	Lys	Leu	Thr	Ser	Val	Ser	Lys	Lys	Lys	Asp	Arg	Glu	
	225						230					235				
cag	agg	gga	caa	gaa	aac	acg	gct	gct	ttc	tgg	ttc	aac	cga	tcg	aac	888
Gln	Arg	Gly	Gln	Glu	Asn	Thr	Ala	Ala	Phe	Trp	Phe	Asn	Arg	Ser	Asn	
	240					245					250					
gaa	ctg	atc	tgg	tta	gaa	ctg	cag	gcc	tgg	cac	gcg	ggc	cgc	acc	atc	936
Glu	Leu	Ile	Trp	Leu	Glu	Leu	Gln	Ala	Trp	His	Ala	Gly	Arg	Thr	Ile	
255					260				265						270	
aat	gac	cag	gac	ctc	ttt	ctc	tac	aca	gcc	cgc	cag	gcc	atc	cca	gac	984
Asn	Asp	Gln	Asp	Leu	Phe	Leu	Tyr	Thr	Ala	Arg	Gln	Ala	Ile	Pro	Asp	
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atc	atc	aat	gag	atc	ctc	acc	ttc	aaa	gtt	aac	tac	ggg	agc	att	gcc	1032
Ile	Ile	Asn	Glu	Ile	Leu	Thr	Phe	Lys	Val	Asn	Tyr	Gly	Ser	Ile	Ala	
			290					295					300			
ttc	tcc	agc	aat	gga	gcc	ggt	ttc	aac	ggg	ccc	ttg	gta	gaa	ggc	cag	1080
Phe	Ser	Ser	Asn	Gly	Ala	Gly	Phe	Asn	Gly	Pro	Leu	Val	Glu	Gly	Gln	
	305						310					315				
tgc	aga	acc	cct	cag	gag	aca	aac	cgt	gtg	ggc	tgc	tca	tcg	tac	cac	1128
Cys	Arg	Thr	Pro	Gln	Glu	Thr	Asn	Arg	Val	Gly	Cys	Ser	Ser	Tyr	His	
	320					325					330					
gag	cac	ctc	cag	cgc	cag	agg	gtc	tcg	ttt	gag	cag	gtg	aag	cgg	ata	1176
Glu	His	Leu	Gln	Arg	Gln	Arg	Val	Ser	Phe	Glu	Gln	Val	Lys	Arg	Ile	
335					340					345					350	
atg	gag	ctg	ctg	gag	tac	atg	gag	gca	ctt	tac	cca	tcc	ttg	cag	gct	1224
Met	Glu	Leu	Leu	Glu	Tyr	Met	Glu	Ala	Leu	Tyr	Pro	Ser	Leu	Gln	Ala	
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ctg	cag	aag	gac	tat	gaa	cgg	tac	gcc	gcc	aag	gac	ttt	gag	gac	aga	1272
Leu	Gln	Lys	Asp	Tyr	Glu	Arg	Tyr	Ala	Ala	Lys	Asp	Phe	Glu	Asp	Arg	
			370					375					380			

gtg cag gcg ctc tgc ctg tgg ctc aac atc acg aaa gat cta aat cag	1320
Val Gln Ala Leu Cys Leu Trp Leu Asn Ile Thr Lys Asp Leu Asn Gln	
385 390 395	
aag ctc cgg atc atg ggc acc gtg ctg ggc atc aag aac cta tca gac	1368
Lys Leu Arg Ile Met Gly Thr Val Leu Gly Ile Lys Asn Leu Ser Asp	
400 405 410	
att ggc tgg cca gtg ttt gaa atc ccc tcc cct cgg ccg tcc aag ggc	1416
Ile Gly Trp Pro Val Phe Glu Ile Pro Ser Pro Arg Pro Ser Lys Gly	
415 420 425 430	
tac gag cca gag gac gag gtc gag gac acg gag gtt gag ctg agg gag	1464
Tyr Glu Pro Glu Asp Glu Val Glu Asp Thr Glu Val Glu Leu Arg Glu	
435 440 445	
ctg gag agc ggg acg gag gag agt gac gag gag cca acc ccc agt ccg	1512
Leu Glu Ser Gly Thr Glu Glu Ser Asp Glu Glu Pro Thr Pro Ser Pro	
450 455 460	
agg gtg cca gag ctc agg ctg tcc aca gac acc atc ttg gac agt cgc	1560
Arg Val Pro Glu Leu Arg Leu Ser Thr Asp Thr Ile Leu Asp Ser Arg	
465 470 475	
tcc cag ggc tgc gtc tcc agg aag ctg gag agg ctc gag tca gag gaa	1608
Ser Gln Gly Cys Val Ser Arg Lys Leu Glu Arg Leu Glu Ser Glu Glu	
480 485 490	
gat tcc ata ggc tgg ggg aca gcg gac tgt ggc cct gaa gcc agc agg	1656
Asp Ser Ile Gly Trp Gly Thr Ala Asp Cys Gly Pro Glu Ala Ser Arg	
495 500 505 510	
cat tgt ttg act tct atc tat aga cca ttc gtg gac aaa gca ctg aag	1704
His Cys Leu Thr Ser Ile Tyr Arg Pro Phe Val Asp Lys Ala Leu Lys	
515 520 525	
caa atg ggg cta aga aag tta att tta cga ctt cat aag ctt atg aat	1752
Gln Met Gly Leu Arg Lys Leu Ile Leu Arg Leu His Lys Leu Met Asn	
530 535 540	
ggg tcc ttg caa aga gct cgt gta gct ctg gtg aag gac gac cgt cca	1800
Gly Ser Leu Gln Arg Ala Arg Val Ala Leu Val Lys Asp Asp Arg Pro	
545 550 555	
gtg gag ttc tct gac ttt cca ggt ccc atg tgg ggc tcg gat tat gtg	1848
Val Glu Phe Ser Asp Phe Pro Gly Pro Met Trp Gly Ser Asp Tyr Val	
560 565 570	
cag ttg tcg gga aca cct cct tcc tca gag cag aag tgt agc gct gtg	1896
Gln Leu Ser Gly Thr Pro Pro Ser Ser Glu Gln Lys Cys Ser Ala Val	
575 580 585 590	
tcc tgg gaa gaa ctg aga gcc atg gac ctg cct tcc ttt gag ccc gcc	1944
Ser Trp Glu Glu Leu Arg Ala Met Asp Leu Pro Ser Phe Glu Pro Ala	
595 600 605	
ttc ctg gtg ctc tgt cgg gtc ctg ctg aac gtg atc cac gag tgc ctg	1992
Phe Leu Val Leu Cys Arg Val Leu Leu Asn Val Ile His Glu Cys Leu	
610 615 620	
aag ctg cgg ctg gaa cag agg cct gcc ggg gag cct tcc ctc ttg agt	2040
Lys Leu Arg Leu Glu Gln Arg Pro Ala Gly Glu Pro Ser Leu Leu Ser	
625 630 635	

atc aaa cag cta gtg cga gag tgt aaa gag gtc cta aag ggc ggg ctc	2088
Ile Lys Gln Leu Val Arg Glu Cys Lys Glu Val Leu Lys Gly Gly Leu	
640 645 650	
ctg atg aag cag tat tac cag ttc atg ctg cag gag gtc ctg ggc gga	2136
Leu Met Lys Gln Tyr Tyr Gln Phe Met Leu Gln Glu Val Leu Gly Gly	
655 660 665 670	
ctg gag aag acc gac tgc aac atg gat gcc ttt gag gag gac ctg cag	2184
Leu Glu Lys Thr Asp Cys Asn Met Asp Ala Phe Glu Glu Asp Leu Gln	
675 680 685	
aag atg ctg atg gtg tat ttt gat tac atg aga agc tgg atc caa atg	2232
Lys Met Leu Met Val Tyr Phe Asp Tyr Met Arg Ser Trp Ile Gln Met	
690 695 700	
cta cag cag tta cct cag gct tcc cat agc tta aaa aac ctg cta gaa	2280
Leu Gln Gln Leu Pro Gln Ala Ser His Ser Leu Lys Asn Leu Leu Glu	
705 710 715	
gag gaa tgg aat ttc acc aaa gaa ata acc cat tat atc cgt ggc gga	2328
Glu Glu Trp Asn Phe Thr Lys Glu Ile Thr His Tyr Ile Arg Gly Gly	
720 725 730	
gaa gcg cag gct gga aag ctt ttc tgt gac atc gca ggg atg ctg ctg	2376
Glu Ala Gln Ala Gly Lys Leu Phe Cys Asp Ile Ala Gly Met Leu Leu	
735 740 745 750	
aaa tcc aca ggg agc ttt ctg gaa tcc ggc ctg cag gag agc tgt gct	2424
Lys Ser Thr Gly Ser Phe Leu Glu Ser Gly Leu Gln Glu Ser Cys Ala	
755 760 765	
gag ctg tgg acc agc gcc gac gac aac ggt gct gcc gac gag cta agg	2472
Glu Leu Trp Thr Ser Ala Asp Asp Asn Gly Ala Ala Asp Glu Leu Arg	
770 775 780	
aga tct gtc atc gag atc agc cga gca ctc aag gag ctc ttc cac gaa	2520
Arg Ser Val Ile Glu Ile Ser Arg Ala Leu Lys Glu Leu Phe His Glu	
785 790 795	
gcc agg gaa aga gcc tcc aag gcc ctg ggc ttt gct aaa atg ctg agg	2568
Ala Arg Glu Arg Ala Ser Lys Ala Leu Gly Phe Ala Lys Met Leu Arg	
800 805 810	
aag gac cta gaa ata gca gca gag ttc gtg cta tct gca tca gcc cga	2616
Lys Asp Leu Glu Ile Ala Ala Glu Phe Val Leu Ser Ala Ser Ala Arg	
815 820 825 830	
gag ctc ctg gac gct ctg aaa gca aag cag tat gtt aag gta cag att	2664
Glu Leu Leu Asp Ala Leu Lys Ala Lys Gln Tyr Val Lys Val Gln Ile	
835 840 845	
ccc ggg tta gag aat ttg cac gtg ttt gtc ccc gac agc ctc gct gag	2712
Pro Gly Leu Glu Asn Leu His Val Phe Val Pro Asp Ser Leu Ala Glu	
850 855 860	
gag aag aaa att att ttg cag cta ctc aat gct gcc aca gga aag gac	2760
Glu Lys Lys Ile Ile Leu Gln Leu Leu Asn Ala Ala Thr Gly Lys Asp	
865 870 875	
tgc tca aag gat cca gac gac gtc ttc atg gat gcc ttc ctg ctc ctg	2808
Cys Ser Lys Asp Pro Asp Val Phe Met Asp Ala Phe Leu Leu Leu	
880 885 890	

acc aag cat ggg gac cga gcc cgt gac tca gaa gat ggc tgg ggc aca	2856
Thr Lys His Gly Asp Arg Ala Arg Asp Ser Glu Asp Gly Trp Gly Thr	
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tggt gaa gct cgg gct gtc aaa att gtg cct cag gtg gag act gtg gac	2904
Trp Glu Ala Arg Ala Val Lys Ile Val Pro Gln Val Glu Thr Val Asp	
915 920 925	
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Thr Leu Arg Ser Met Gln Val Asp Asn Leu Leu Leu Val Val Met Glu	
930 935 940	
tct gct cac ctc gta ctt cag aga aaa gcc ttc cag cag tcc att gag	3000
Ser Ala His Leu Val Leu Gln Arg Lys Ala Phe Gln Gln Ser Ile Glu	
945 950 955	
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Gly Leu Met Thr Val Arg His Glu Gln Thr Ser Ser Gln Pro Ile Ile	
960 965 970	
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Ala Lys Gly Leu Gln Gln Leu Lys Asn Asp Ala Leu Glu Leu Cys Asn	
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Arg Ile Ser Asp Ala Ile Asp Arg Val Asp His Met Phe Thr Leu Glu	
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Phe Asp Ala Glu Val Glu Glu Ser Glu Ser Ala Thr Leu Gln Gln Tyr	
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tac cga gaa gcc atg att cag ggc tac aac ttt ggg ttt gag tat cat	3240
Tyr Arg Glu Ala Met Ile Gln Gly Tyr Asn Phe Gly Phe Glu Tyr His	
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Lys Glu Val Val Arg Leu Met Ser Gly Glu Phe Arg Gln Lys Ile Gly	
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Asp Lys Tyr Ile Ser Phe Ala Gln Lys Trp Met Asn Tyr Val Leu Thr	
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Lys Cys Glu Ser Gly Arg Gly Thr Arg Pro Arg Trp Ala Thr Gln Gly	
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Glu Asp Asp Phe Leu Ser Leu Gln Ala Leu Met Asn Glu Cys Ile Gly	
1105 1110 1115	
cac gtc ata gga aag cca cac agc cct gtc aca gct atc cat cgg aac	3528
His Val Ile Gly Lys Pro His Ser Pro Val Thr Ala Ile His Arg Asn	
1120 1125 1130	
agc ccc cgc cct gtg aag gtg ccc cga tgc cac agt gac cct cct aac	3576
Ser Pro Arg Pro Val Lys Val Pro Arg Cys His Ser Asp Pro Pro Asn	
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Pro His Leu Ile Ile Pro Thr Pro Glu Gly Phe Ser Thr Arg Ser Val	
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cct tcc gac gct cgg acc cat ggc aac tct gtt gct gct gct gct gct	3672
Pro Ser Asp Ala Arg Thr His Gly Asn Ser Val Ala Ala Ala Ala Ala	
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gtt cgt gcc gcc gcc acc act gct gct ggc cgc cct ggc cca ggt ggt	3720
Val Arg Ala Ala Ala Thr Thr Ala Ala Gly Arg Pro Gly Pro Gly Gly	
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ggg gac tct gtg cca gcc aaa cct gtc aac act gcc cct gat acc agg	3768
Gly Asp Ser Val Pro Ala Lys Pro Val Asn Thr Ala Pro Asp Thr Arg	
1200 1205 1210	
ggg tcc agt gtc cct gaa aac gac cgc ttg gcc tcc ata gct gca gaa	3816
Gly Ser Ser Val Pro Glu Asn Asp Arg Leu Ala Ser Ile Ala Ala Glu	
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Leu Gln Phe Arg Ser Leu Ser Arg His Ser Ser Pro Thr Glu Glu Arg	
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gac gag cca gcg tat cct cgg agt gac tca agt gga tca act cgg aga	3912
Asp Glu Pro Ala Tyr Pro Arg Ser Asp Ser Ser Gly Ser Thr Arg Arg	
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agc tgg gaa ctt cga aca ctc atc agc cag acc aaa gac tcg gcc tct	3960
Ser Trp Glu Leu Arg Thr Leu Ile Ser Gln Thr Lys Asp Ser Ala Ser	
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Lys Gln Gly Pro Ile Glu Ala Ile Gln Lys Ser Val Arg Leu Phe Glu	
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tgc gat acc cct aag tcc tat gat aac gtc atg cat gtt gga ctg agg	4104
Cys Asp Thr Pro Lys Ser Tyr Asp Asn Val Met His Val Gly Leu Arg	
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Lys Val Thr Phe Lys Trp Gln Arg Gly Asn Lys Ile Gly Glu Gly Gln	
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tat gga aaa gta tac acc tgc atc agt gtt gac aca ggg gag ctg atg	4200
Tyr Gly Lys Val Tyr Thr Cys Ile Ser Val Asp Thr Gly Glu Leu Met	
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gcc atg aag gag att cga ttt cag cct aac gac cac aag act atc aag	4248
Ala Met Lys Glu Ile Arg Phe Gln Pro Asn Asp His Lys Thr Ile Lys	
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gag act gca gac gag ttg aaa ata ttt gaa ggc atc aag cac ccc aac	4296
Glu Thr Ala Asp Glu Leu Lys Ile Phe Glu Gly Ile Lys His Pro Asn	
1375 1380 1385 1390	
ctg gtc cgg tat ttt ggc gtg gag ctt cac agg gaa gag atg tac atc	4344
Leu Val Arg Tyr Phe Gly Val Glu Leu His Arg Glu Glu Met Tyr Ile	
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ttc atg gag tac tgt gat gag ggt aca cta gag gag gtg tca cga ctg 4392
 Phe Met Glu Tyr Cys Asp Glu Gly Thr Leu Glu Glu Val Ser Arg Leu
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 Gly Leu Gln Glu His Val Ile Arg Leu Tyr Thr Lys Gln Ile Thr Val
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gcc atc aac gtc ctc cat gag cac ggc atc gtt cac cga gac atc aaa 4488
 Ala Ile Asn Val Leu Phe His Glu His Gly Ile Val His Arg Asp Ile Lys
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 Phe Gly Cys Ser Val Lys Leu Lys Asn Asn Ala Gln Thr Met Pro Gly
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 Glu Val Asn Ser Thr Leu Gly Thr Ala Ala Tyr Met Ala Pro Glu Val
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 Ile Thr Arg Ala Lys Gly Glu Gly His Gly Arg Ala Ala Asp Ile Trp
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 Ser Leu Gly Cys Val Ile Glu Met Val Thr Gly Lys Arg Pro Trp
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cat gag tat gaa cac aac ttt cag att atg tac aag gtg ggg atg gga 4776
 His Glu Tyr Glu His Asn Phe Gln Ile Met Tyr Lys Val Gly Met Gly
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 His Lys Pro Pro Ile Pro Glu Arg Leu Ser Pro Glu Gly Lys Ala Phe
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Leu Gly Glu Ser Ala Arg Lys Ser Met Glu Ser Asp Pro Glu Asp Phe
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Ser Asp Glu Thr Asn Thr Glu Thr Leu Tyr Gly Thr Ser Pro Pro Ser
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Thr Pro Arg Gln Met Lys Arg Leu Ser Ala Lys His Gln Arg Asn Ser
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Ala Gly Arg Pro Ala Ser Arg Ser Asn Leu Lys Glu Lys Met Asn Thr
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Pro Ser Gln Ser Pro His Lys Asp Leu Gly Lys Gly Val Glu Thr Val
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Glu Glu Tyr Ser Tyr Lys Gln Glu Lys Lys Ile Arg Ala Thr Leu Arg
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Thr Thr Glu Arg Asp His Lys Lys Asn Ala Gln Cys Ser Phe Met Leu
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Asp Ser Val Ala Gly Ser Leu Pro Lys Lys Ser Ile Pro Asp Val Asp
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Leu Asn Lys Pro Tyr Leu Ser Leu Gly Cys Ser Asn Ala Lys Leu Pro
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Val Ser Met Pro Met Pro Ile Ala Arg Thr Ala Arg Gln Thr Ser Arg
      195            200            205

Thr Asp Cys Pro Ala Asp Arg Leu Lys Phe Phe Glu Thr Leu Arg Leu
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Gly Gln Glu Asn Thr Ala Ala Phe Trp Phe Asn Arg Ser Asn Glu Leu
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Ile Trp Leu Glu Leu Gln Ala Trp His Ala Gly Arg Thr Ile Asn Asp
      260            265            270

Gln Asp Leu Phe Leu Tyr Thr Ala Arg Gln Ala Ile Pro Asp Ile Ile
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Asn Glu Ile Leu Thr Phe Lys Val Asn Tyr Gly Ser Ile Ala Phe Ser
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 Ser Asn Gly Ala Gly Phe Asn Gly Pro Leu Val Glu Gly Gln Cys Arg
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 Thr Pro Gln Glu Thr Asn Arg Val Gly Cys Ser Ser Tyr His Glu His
 325 330 335
 Leu Gln Arg Gln Arg Val Ser Phe Glu Gln Val Lys Arg Ile Met Glu
 340 345 350
 Leu Leu Glu Tyr Met Glu Ala Leu Tyr Pro Ser Leu Gln Ala Leu Gln
 355 360 365
 Lys Asp Tyr Glu Arg Tyr Ala Ala Lys Asp Phe Glu Asp Arg Val Gln
 370 375 380
 Ala Leu Cys Leu Trp Leu Asn Ile Thr Lys Asp Leu Asn Gln Lys Leu
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 Arg Ile Met Gly Thr Val Leu Gly Ile Lys Asn Leu Ser Asp Ile Gly
 405 410 415
 Trp Pro Val Phe Glu Ile Pro Ser Pro Arg Pro Ser Lys Gly Tyr Glu
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 Pro Glu Asp Glu Val Glu Asp Thr Glu Val Glu Leu Arg Glu Leu Glu
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 Ser Gly Thr Glu Glu Ser Asp Glu Glu Pro Thr Pro Ser Pro Arg Val
 450 455 460
 Pro Glu Leu Arg Leu Ser Thr Asp Thr Ile Leu Asp Ser Arg Ser Gln
 465 470 475 480
 Gly Cys Val Ser Arg Lys Leu Glu Arg Leu Glu Ser Glu Glu Asp Ser
 485 490 495
 Ile Gly Trp Gly Thr Ala Asp Cys Gly Pro Glu Ala Ser Arg His Cys
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 Leu Thr Ser Ile Tyr Arg Pro Phe Val Asp Lys Ala Leu Lys Gln Met
 515 520 525
 Gly Leu Arg Lys Leu Ile Leu Arg Leu His Lys Leu Met Asn Gly Ser
 530 535 540
 Leu Gln Arg Ala Arg Val Ala Leu Val Lys Asp Asp Arg Pro Val Glu
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 Phe Ser Asp Phe Pro Gly Pro Met Trp Gly Ser Asp Tyr Val Gln Leu
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 Val Leu Cys Arg Val Leu Leu Asn Val Ile His Glu Cys Leu Lys Leu
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 Trp Thr Ser Ala Asp Asp Asn Gly Ala Ala Asp Glu Leu Arg Arg Ser
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 Leu Asp Ala Leu Lys Ala Lys Gln Tyr Val Lys Val Gln Ile Pro Gly
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A2
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